

CLAIMS

We claim:

1. A process for converting an oxygenate feedstock into an olefin product stream comprising:
 - a) contacting an oxygenate feedstock with a molecular sieve catalyst in a reactor under conditions effective to convert the feedstock into an olefin product stream and to form carbonaceous deposits on the catalyst;
 - b) contacting at least a portion of said catalyst having said carbonaceous deposits with an oxygen containing gas under conditions effective to obtain a regenerated catalyst having a reduced carbonaceous deposit level and having an increased molecular oxygen content;
 - c) removing at least 60% by volume of said molecular oxygen from said regenerated catalyst based upon the total volume of said molecular oxygen;
 - d) returning said regenerated catalyst to said reactor; and
 - e) repeating steps (a) - (d).
2. The process of claim 1, further comprising the step of stripping hydrocarbons from said catalyst prior to said step of regenerating said catalyst.
3. The process of claim 2, wherein said stripped hydrocarbons are returned to said reactor.
4. The process of claim 1, wherein at least 65% by volume of said molecular oxygen is removed from said regenerated catalyst based upon the total volume of said molecular oxygen.

5. The process of claim 1, wherein at least 70% by volume of said molecular oxygen is removed from said regenerated catalyst based upon the total volume of said molecular oxygen.
6. The process of claim 1, wherein at least 75% by volume of said molecular oxygen is removed from said regenerated catalyst based upon the total volume of said molecular oxygen.
7. The process of claim 1, wherein at least 80% by volume of said molecular oxygen is removed from said regenerated catalyst based upon the total volume said molecular oxygen.
8. The process of claim 1, wherein between 60% to 95% by volume of said molecular oxygen is removed from said regenerated catalyst based upon the total volume of said molecular oxygen.
9. The process of claim 1, wherein between 65% to 95% by volume of said molecular oxygen is removed from said regenerated catalyst based upon the total volume of said molecular oxygen.
10. The process of claim 1, wherein between 70% to 95% by volume of said molecular oxygen is removed from said regenerated catalyst based upon the total volume of said molecular oxygen.
11. The process of claim 1, wherein between 75% to 95% by volume of said molecular oxygen is removed from said regenerated catalyst based upon the total volume of said molecular oxygen.
12. The process of claim 1, wherein between 80% to 95% by volume of said molecular oxygen is removed from said regenerated catalyst based upon the total volume of said molecular oxygen.

13. The process of claim 1, wherein the oxygenate feedstock is contacted with said molecular sieve catalyst in a riser reactor.
14. The process of claim 1, wherein the oxygenate feedstock comprises at least one of methanol, ethanol, n-propanol, isopropanol, methyl ethyl ether, dimethyl ether, diethyl ether, di-isopropyl ether, formaldehyde, dimethyl carbonate, dimethyl ketone, acetic acid, and mixtures thereof.
15. The process of claim 1, wherein the oxygenate feedstock is contacted with the molecular sieve catalyst at a temperature in the range of 200°C to about 700°C.
16. The process of claim 1, wherein the oxygenate feedstock is contacted with the molecular sieve catalyst at a pressure in the range of 0.1 kPa to 100 MPa.
17. The process of claim 1, wherein the oxygenate feedstock is mixed with a diluent comprising at least one of helium, argon, nitrogen, carbon monoxide, carbon dioxide, water, paraffins, aromatic compounds, and mixtures thereof.
18. The process of claim 1, wherein the olefin product stream comprises at least one of ethylene, propylene, butylene and mixtures thereof.